

**REMARKS**

Claims 1-17 are pending in the application. In the Office Action dated September 27, 2004, the Examiner: (1) rejected claims 1, 3, 4 and 7 under 35 U.S.C. § 102(b) as being anticipated by Hawes (U.S. Patent No. 3,728,030); (2) rejected claims 2, 14, 16 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Hawes; (3) objected to claims 5 and 15 as being dependent upon a rejected base claim; and (4) allowed claims 6 and 8-13.

Applicants gratefully acknowledge the Examiner's allowance of claims 6, 8 and 9-13. As allowed, each of claims 9 and 13 incorporated the subject matter of claim 1 by reference. Accordingly, Applicants have rewritten claims 9 and 13 to include the subject matter of claim 1 as it appeared prior to the present amendment. Applicants also gratefully acknowledge the Examiner's indication of allowable subject matter in objected to claims 5 and 15. Applicants have rewritten each of claims 5 and 15 in independent form, thereby rendering these claims allowable as well.

By this amendment, Applicants have also amended independent claim 1 and dependent claim 7. Independent claim 14 remains in its original form. For at least the reasons set forth below, Applicants traverse the rejections of claim 1-4, 7, 14, 16 and 17 and respectfully request that the rejections be withdrawn, and the claims allowed.

**Claim Rejections – 35 U.S.C. § 102**

Claims 1, 3, 4 and 7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Hawes. Applicants disagree with the Examiner's interpretation of Hawes.

Nevertheless, solely in order to advance prosecution of the present application,

Applicants have amended claim 1 to recite:

at least one elliptical retarder arranged in at least one of the first and second interferometric arms to generate first and second polarization states in the first and second interferometric arms, respectively, that are orthogonal to each other for at least one polarization state of the input light signal

*Claim 1, II. 14-17.* Further, claim 7 has been amended to refer to “the at least one elliptical retarder” of claim 1, so as to maintain antecedent basis. Support for these amendments may be found in at least the description of the third embodiment of the present invention (Applicants’ Specification, p. 17, l. 9, through p. 19, l. 26; and FIGS. 8-9C).

Hawes discloses a device including arm reflectors 35 and 38 having odd and even numbers of mirrors, respectively. The mirrors are arranged so as not to directly reflect the beam, but to instead reflect the beam with some lateral offset. *Id.* One arm reflector 38 is movable relative to the other arm reflector 35. *Id.* at col. 7, ll. 31-36. As a result, two light beams 42 and 48 are produced, “one of said beams being progressively retarded in phase with respect to the other, the retardation rate being different for different wavelengths” within the bandwidth of the broadband signal. *Id.* at col. 11, ll. 33-37. The beams 42 and 48 are recombined and used to measure dichroism in a sample 14 placed in the output arm. See *id.* at col. 5, l. 66, through col. 6, l. 13.

The Examiner cites column 7, lines 52-59, and column 11, lines 28-44, of Hawes as teaching “at least one retarder.” *Office Action*, p. 2, ll. 20-21. However, the Hawes device produces a wavelength-dependent varying phase retardation (Hawes, col. 7, ll. 55-58; and col. 11, 33-37) that is wholly different from the phase retarding effect of an

elliptical retarder. See, e.g., Applicants' Specification, p. 17, ll. 24-25. Thus, the components of Hawes which produce the varying retardation relied upon by the Examiner cannot be equated with the elliptical retarder recited in claim 1.

Moreover, there would be no motivation to replace the retarding components of Hawes with an elliptical retarder since to do so would remove the wavelength-dependent progressive retardation that Hawes depends upon to measure dichroism of the sample 14. Hawes, col. 11, ll. 25-55.

For at least these reasons, claim 1, as amended, is distinguished from Hawes. Accordingly, Applicants respectfully request that the rejection of claim 1 under 35 U.S.C. § 102(b) be withdrawn and the claim allowed.

Further, claims 3, 4 and 7 depend from claim 1. As explained, claims 1 is distinguished from Hawes. Consequently, claims 3, 4 and 7 are also allowable at least for the reason that they depend from allowable claim 1. Accordingly, for at least these reasons, Applicants respectfully request that the rejection of claims 3, 4 and 7 under 35 U.S.C. § 102(b) be withdrawn and the claims allowed.

**Claim Rejections – 35 U.S.C. § 103**

Claims 2, 14, 16 and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hawes. Applicants respectfully traverse these rejections.

With respect to claim 2, the Examiner concedes that Hawes does not teach "a phase shifter arranged in one of the first and second interferometric arms to ensure that there is an optical path difference between the first and second interferometric arms that is higher than a coherence length specified for the light signal." See *Office Action*, p. 5,

II. 4-7. However, the Examiner asserts that such feature “is notoriously well known.” *Id.* at p. 5, II. 8-11.

However, Applicants respectfully challenge the Examiner’s assertion that “it is notoriously well known [to use] a phase shifter arranged in one of the first and second interferometric arms to ensure that there is an optical path difference between the first and second interferometric arms that is higher than a coherence length specified for the light signal when using a [Mach-Zender interferometer].” *Id.* Accordingly, should the Examiner maintain the position that such feature was “notoriously well known,” Applicants respectfully request that a prior art reference be provided in support of such statement, pursuant to M.P.E.P § 2144.

The Examiner also asserts that it would have been obvious to one of ordinary skill to modify Hawes by ensuring that the optical path difference between the first and second interferometric arms is higher than a coherence length for the light signal because such would result in more efficient operation. See *Office Action*, p. 5, II. 12-13. However, Applicants respectfully disagree.

The Hawes interferometer is described as being “operable to produce separate *but coherent*” beams. Hawes, col. 11, II. 28-32. Thus, the Hawes design relies upon the light beams 42 and 48 in the two arms to be *coherent*, which means that the path lengths differ by *less* than the coherence length of the light source. Thus, contrary to the Examiner’s assertions, one of ordinary skill in the art would not have been motivated to modify Hawes “to ensure that there is an optical path difference between the first and second interferometric arms that is *higher* than a coherence length specified for the light signal,” as recited in claim 2 (emphasis added).

Further, Hawes is drawn to the measurement of the dichroism of a sample 14. See Hawes, Summary of the Invention. In order to derive a demodulation function for the sample, Hawes requires that the “zero order” position (i.e., the position at which the optical path difference is zero) be determined. Hawes, col. 9, ll. 9-15 and 26-31. This requires that the optical path difference between the first and second arms be adjusted to zero. *Id.* Thus, one of ordinary skill in the art would not have been motivated to modify Hawes by adding “a phase shifter arranged in one of the first and second interferometric arms to ensure that there is an *optical path difference* between the first and second interferometric arms that is higher than a coherence length specified for the light signal,” as recited in claim 2 (emphasis added).

For at least these reasons, claim 2 is distinguished from Hawes. Accordingly, Applicants respectfully request that the rejection of claim 2 under 35 U.S.C. § 103(a) be withdrawn and the claim allowed.

As to claim 14, the Examiner asserts that Hawes teaches “an interferometer arrangement comprising first and second arms having an optical path difference therebetween greater than the coherence length of the light source.” *Office Action*, p. 5, ll. 16-18. However, Applicants can find no such teaching in Hawes, either in the cited portions thereof or anywhere else. To the contrary, as pointed out above with respect to claim 2, the Hawes design relies on the light beams in the two interferometer arms being coherent. Hawes, col. 11, ll. 28-32. Further, as explained above with respect to claim 2, one of skill in the art would not have been motivated to modify Hawes to include the “first and second arms having an optical path difference therebetween *greater* than the coherence length of the light signal,” as recited in claim 14 (emphasis added).

For at least these reasons, claim 14 is also distinguished from Hawes.

Accordingly, Applicants respectfully request that the rejection of claim 14 under 35 U.S.C. § 103(a) be withdrawn and the claim allowed.

Claims 16 and 17 depend from claim 14. As explained above, claim 14 is distinguishable from Hawes. Therefore, claims 16 and 17 are also distinguishable from Hawes for at least the same reasons set forth for claim 14. Accordingly, Applicants respectfully request that the rejection of claims 16 and 17 be withdrawn, and the claims allowed.

**Conclusion**

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

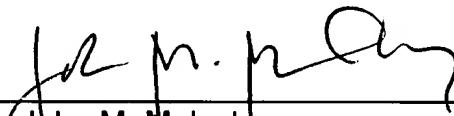
Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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